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10/029,986	12/31/2001	Jong-hwan Lee	1349.1041	6194

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EXAMINER

DEWITTE, CONRAD J

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 01/05/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,986

Applicant(s)

LEE, JONG-HWAN

Examiner

Conrad J. DeWitte

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 7, 10, and 13 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Claim 7 is rejected because it depends on itself.
3. Claim 10 is rejected because it depends on itself.
4. Claim 13 is rejected because it depends on itself.
5. In light of the preceding, the Examiner suggests that applicant check the dependencies of all the claims to make sure that each dependent claim depends on the desired preceding claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, 12, 13, 15, and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by Usuki et al., U.S. Pat. No. 5,774,096 A.
8. Regarding claim 1, Usuki et al. discloses a wearable display apparatus worn near left and right eyes of a user and to display images to be recognized through the left and right eyes, comprising: a main control unit outputting view display position adjustment information corresponding to inputted interpupillary distance setting information indicative of an interpupillary distance between the left and right eyes (col. 4, lines 57-60; col. 28, lines 12-28;

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Fig. 42, elements 690, 692, 800); and display units respectively display-processing image information inputted to an area within a display region corresponding to the view display position adjustment information (col. 27, lines 60-65), the display region being smaller than an entire view display area of the display units (col. 25, lines 26-33; Fig. 50, elements 7L, 7R).

9. Regarding claim 3, Usuki et al., further discloses a sensor mounted on a main body, detecting the interpupillary distance of the user, and outputting the interpupillary distance setting information to the main control unit (col. 3, lines 12-25; Fig. 2, element 15).

10. Regarding claim 12, Usuki et al. discloses a method of controlling a wearable display apparatus formed to be worn near to both eyes of a human body and of displaying images to be recognized through the eyes, comprising: outputting view display position adjustment information corresponding to inputted interpupillary distance setting information indicative of an interpupillary distance between the left and right eyes (col. 28, lines 12-28); and display-processing image information inputted to an area within a display region corresponding to the view display position adjustment information (col. 27, lines 60-65), the display region being smaller than an entire view display area of the display unit (col. 25, lines 26-33; Fig. 50, element 7L, 7R).

11. Regarding claim 13, Usuki et al. further discloses that the interpupillary distance setting information is produced by a manipulation of the user (col. 22, lines 19-23; Fig. 43(a), step S202).

12. Regarding claim 15, Usuki et al. discloses an apparatus comprising: display units display-processing image information inputted to an areas corresponding to a view display position adjustment information of a main control unit to view on the display units (col. 27, lines 60-65).

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13. Regarding claim 16, Usuki et al. further discloses that the view display position adjustment information corresponds to inputted interpupillary distance setting information indicative of an interpupillary distance between left and right eyes of a user (col. 27, lines 60-65).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 4, 5, 6, and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Usuki et al. as applied to claim 1 above, and further in view of Ronzani et al., U.S. Pat. No. 6,448,944 B2.

16. Regarding claim 4, Usuki et al. discloses a first display unit having a first display device mounted on a main body to display an image to the left eye of the user (col. 25, lines 26-33; Fig. 50, element 650L), and a second display unit having a second display device mounted on the main body to display an image to the right eye of the user (col. 25, lines 26-33; Fig. 50, element 650R); and a display control unit selectively driving the row electrodes and the column electrodes to display the image at a view display position corresponding to the view display position adjustment information (col. 21, lines 56-63; Fig. 42, elements 694R, 694L, 690). Usuki et al. fails to disclose that said first and second display device each comprising: a matrix display unit displaying pixel information by selective driving of row electrodes and column electrodes, the row electrodes being arranged along a horizontal direction, and the column electrodes being

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arranged along a direction crossed at an angle with respect to the horizontal direction. Ronzani et al. does disclose that said first and second display device each comprising: a matrix display unit displaying pixel information by selective driving of row electrodes and column electrodes, the row electrodes being arranged along a horizontal direction, and the column electrodes being arranged along a direction crossed at an angle with respect to the horizontal direction. Col. 5, lines 7-16; Fig. 1B, elements 13, 19, 21, 23. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Usuki et al. and Ronzani et al. to make the claimed invention because both patents address improving the display of images with a head mounted device. Usuki et al., col. 2, line 50-col. 3, line 2; Ronzani et al., col. 1, lines 14-40.

17. Regarding claim 5, Usuki et al. further discloses that a display area of the matrix display unit is larger at a length in a horizontal direction corresponding to a direction linking a wearing position of the left and right eyes than an internally set image display area (col. 25, lines 41-54; Fig. 50, elements 7114, 7112L, 7112R).

18. Regarding claim 6, Ronzani et al. further discloses a column electrode driving unit selecting the column electrodes and outputting image information (col. 15, lines 30-46; Fig. 14, element 18); a row electrode driving unit sequentially activating the row electrodes (*id.*); and a drive control unit controlling the row electrode driving unit and the column electrode driving unit to write image data to the row and column electrodes corresponding to the view display position adjustment information (col. 15, lines 30-46; Fig. 14, element 888).

19. Regarding claim 9, Ronzani et al. further discloses that the display control unit includes: a row electrode driving unit selecting the row electrodes and outputting image information (col.

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15, lines 30-46; Fig. 14, element 20); a column electrode driving unit sequentially activating the column electrodes (col. 15, lines 30-46; Fig. 14, element 18); and a drive control unit controlling the row electrode driving unit and the column electrode driving unit to write image data to the row and column electrodes corresponding to the view display position adjustment information (col. 15, lines 30-46; Fig. 14, element 888).

20. Claims 7, 8, 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Usuki et al. and Ronzani et al. as applied to claims 1 and 6 above, and further in view of Cairns et al., U.S. Pat. No. 6,266,041 B1.

21. Regarding claim 7, Usuki et al. fails to disclose that the column electrode driving unit comprises: a plurality of flip-flops connected in series, each of the plurality of flip-flops corresponding to one of the column electrodes; and a switch unit mounted to output to the corresponding column electrodes, image signals outputted from the drive control unit according to a signal outputted from an output port of the corresponding one of the plurality of flip-flops. However, Cairns et al. does disclose that the column electrode driving unit comprises: a plurality of flip-flops connected in series, each of the plurality of flip-flops corresponding to one of the column electrodes (Fig. 2, element 9); and a switch unit mounted to output to the corresponding column electrodes (Fig. 2, element 12), image signals outputted from the drive control unit according to a signal outputted from an output port of the corresponding one of the plurality of flip-flops (col. 1, line 31-col. 3, line 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cairns et al. with Usuki et al. and Ronzani et al. to make the claimed invention because Cairns merely discloses in more detail the conventional structure of the column electrode driving unit disclosed in Usuki et al.

22. Regarding claim 8, Usuki et al. fails to disclose that the row electrode driving unit comprises a plurality of flip-flops arranged in series, each of the plurality of flip-flops corresponding to one of the row electrodes, and having an output port connected to the corresponding row electrode. However, Cairns et al. does disclose that the row electrode driving unit comprises a plurality of flip-flops arranged in series (Fig. 9, elements 11), each of the plurality of flip-flops corresponding to one of the row electrodes (Fig. 9, element 4), and having an output port connected to the corresponding row electrode (Fig. 9, elements 11, 4).

23. Regarding claim 10, Usuki et al. fails to disclose that the row electrode driving unit comprises: a plurality of flip-flops connected in series, each of the plurality of flip-flops corresponding to one of the row electrodes; and a switch unit mounted to output to the corresponding row electrodes, image signals outputted from the drive control unit according to a signal outputted from an output port of the corresponding one of the plurality of flip-flops. However, Cairns et al. does disclose that the row electrode driving unit comprises: a plurality of flip-flops connected in series (Fig. 9, elements 11), each of the plurality of flip-flops corresponding to one of the row electrodes (Fig. 9, element 4); and a switch unit mounted to output to the corresponding row electrodes (Fig. 2, element 12), image signals outputted from the drive control unit according to a signal outputted from an output port of the corresponding one of the plurality of flip-flops (col. 1, line 31-col. 3, line 3).

24. Regarding claim 11, Usuki et al. fails to disclose that the column electrode driving unit comprises a plurality of flip-flops arranged in series, each of the plurality of flip-flops corresponding to one of the row electrodes, and having an output port connected to the corresponding row electrode. However, Cairns et al. does disclose that the column electrode

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driving unit comprises a plurality of flip-flops arranged in series (Fig. 2, elements 11), each of the plurality of flip-flops corresponding to one of the row electrodes (Fig. 9, element 4), and having an output port connected to the corresponding row electrode (Fig. 9, elements 11, 4).

25. Claims 14 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Usuki et al. as applied to claims 12 and 15 above, and further in view of Iwamoto, U.S. Pat. No. 5,751,259 A.

26. Regarding claim 14, Usuki et al. fails to disclose detecting the interpupillary distance setting information using a sensor mounted in a main body. However, Iwamoto does disclose this feature. Col. 3, lines 12-25; Fig. 2, element 15. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Usuki et al. and Iwamoto to make the claimed invention because both patents disclose ways to move a display relative to a user's eye position in order to provide a high quality display even when a user moves his head relative to the display. Usuki et al., col. 2, line 50-col. 3, line 2; Iwamoto, col. 1, lines 10-39.

27. Regarding claim 17, Usuki et al. fails to disclose that the interpupillary distance setting information for the user is set without movements of an optic system. However, Iwamoto does disclose this feature. Col. 3, lines 12-25; Fig. 2, element 15.

28. Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Usuki et al. as applied to claim 1 above, and further in view of Kikuchi, U.S. Pat. No. 518,939 B1.

29. Usuki et al. fails to disclose a key input unit producing the interpupillary distance setting information in correspondence with a manipulation by the user. However, Kikuchi does disclose this feature (col. 17, lines 12-36). It would have been obvious to one of ordinary skill in the art

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at the time the invention was made to combine the teachings of Usuki et al. with Kikuchi to make the claimed invention because Usuki et al. discloses changing the optical axes of both units to improve the picture quality of a head mounted apparatus (*Usuki et al.*, col. 28, lines 12-28), while Kikuchi merely discloses a keyboard for use with a head mounted apparatus to allow for the input of data by a user (*Kikuchi*, col. 17, lines 12-36).

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Yamada et al., U.S. Pat. No. 6,545,650 B1 (disclosing an apparatus for three-dimensionally displaying an object and a method of doing the same)
- Melville et al., U.S. Pat. No. 6,535,183 B2 (disclosing an augmented retinal display with view tracking and data positioning)
- Guralnick, U.S. Pat. No. 6,532,008 B1 (disclosing a method and apparatus for eliminating stereoscopic cross images)
- Rallison et al., U.S. Pat. No. 6,160,666 A (disclosing a personal visual display system)
- Mizoguchi et al., U.S. Pat. No. 6,144,347 A (disclosing a head-mounted image display apparatus)
- Suzuki, U.S. Pat. No. 5,880,773 A (disclosing a head mounted display configured to a user's physical features)
- Hunter, U.S. Pat. No. 5,347,400 A (disclosing an optical system for a virtual reality helmet)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Conrad J. DeWitte whose telephone number is (703) 305-8626. The examiner can normally be reached on Monday through Friday, 8 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.


CJD


Amare Mengistu
Primary Examiner